

1 What is claimed:

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3 1. A printer system comprising a printer adapted to print a
4 location pattern comprising a plurality of dots, each having a
5 substantially predetermined size and nominal position in the pattern,
6 the printer having a resolution constraining the position at which the
7 dots may be printed, the system being adapted to modify at least
8 some of the dots prior to printing such that the optical centre of
9 gravity of the modified dots more closely coincides with their nominal
10 positions.

11

12 2. A system according to claim 1, arranged to modify some of the
13 dots prior to printing by changing shape of those dots from a nominal
14 shape.

15

16 3. A system according to claim 1, arranged to modify some of the
17 dots prior to printing by introducing an asymmetry into the shape of
18 those dots.

19

20 4. A system according to claim 1, wherein the modification
21 substantially does not alter the size of the dots.

22

23 5. A system according to claim 3 or claim 4, wherein the modified
24 dot shape is substantially an "L" shape or substantially a "T" shape.

25

26 6. A system according to claim 1, wherein the nominal position of
27 each dot of the pattern lies offset in one of a plurality of directions,
28 such as above, below, to the left and to the right, from the
29 intersection point of a virtual grid.

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1 7. A system according to claim 6, wherein the modification of the
2 dots has the effect of moving the optical centre of gravity of those
3 dots in a first direction, towards or away from their nominal positions.
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5 8. A system according to claim 7, wherein the modification of the
6 dots has the additional effect of moving the optical centre of gravity
7 of those dots in a second direction, perpendicular to the first
8 direction.
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10 9. A system according to claim 7 or claim 8, wherein dots offset
11 from intersection points of a virtual grid in a first direction have a
12 different shape and/or size compared to dots offset from intersection
13 points of a virtual grid in a second direction.
14

15 10. A system according to claim 7 or claim 8, wherein dots offset
16 from intersection points of a virtual grid in a first direction have the
17 same shape and/or size as dots offset from intersection points of a
18 virtual grid in a second direction.
19

20 11. A system according to claim 10, wherein dots offset in the first
21 direction are rotations of dots offset in the second direction.
22

23 12. A system according to claim 11, wherein dots offset in the first
24 direction are reflections of dots offset in the second direction.
25

26 13. A system according to claim 12, wherein dots offset in the first
27 direction are combined rotations and reflections of dots offset in the
28 second direction.
29

30 14. A system according to claim 1, wherein the printer is a digital
31 printer.

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2 15. A system according to claim 14, wherein the printer also
3 functions as a photocopier.

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5 16. A system according to claim 14, wherein the printer is an inkjet
6 printer, a LED printer, a LCD printers, or a liquid electrophotographic
7 printers.

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9 17. A system according to claim 14, wherein the printer has a
10 resolution approximately between 600 and 1200dpi.

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12 18. A system according to claim 1, wherein the dots are printed in
13 IR absorbing ink.

14

15 19. A system according to claim 1, adapted to print the location
16 pattern without human-discernible content.

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18 20. A system according to claim 1, adapted to print the location
19 pattern and human-discernible content on the same carrier.

20

21 21. A method of generating a location pattern comprising a
22 plurality of dots, comprising the steps of:

23 determining the nominal position of the dots in a pattern area;
24 and,

25 assigning an asymmetrical shape to at least some of the dots
26 in the pattern area, in dependence upon the characteristics of given
27 printer, such that when printed, the optical centre of gravity of those
28 dots substantially coincides with the corresponding nominal
29 positions.

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1 22. A method according to claim 21, further comprising the step of
2 requesting pattern information from a pattern database.

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4 23. A method according to claim 21, further comprising the steps
5 of:

6 determining characteristics of the printer; and,
7 determining whether or not the assigning step is required.

8

9 24. A method according to claim 21, further comprising the step of
10 generating a print file of the pattern area, comprising at least some
11 dots having the assigned asymmetrical shape.

12

13 25. A method according to claim 24, further comprising the step of
14 printing the print file on the given printer.

15

16 26. A method according to claim 21, comprising the step of
17 explicitly defining the shape of the at least some of the dots in the
18 native resolution of the printer.

19

20 27. A method according to claim 26, wherein the shape of the at
21 least some of the dots is defined using any one of a bit map, a font
22 set, or a high level programming language.

23

24 28. A computer program or a printer driver comprising program
25 code means for performing the method steps of any one of claims 21
26 to 27 when the program is run on a computer and/or other processing
27 means associated with suitable apparatus.

28

29 29. A printer system comprising a printer and adapted to print a
30 location pattern comprising a plurality of dots, the system being

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1 arranged to introduce an asymmetry into the shape of at least some
2 of dots prior to printing the pattern.

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4 30. A printer system adapted to print a location pattern comprising
5 a plurality of dots each offset from a nominal position in one of a
6 plurality of directions, the system being arranged to modify the
7 degree of offset of each dot from its nominal position by modifying
8 the shape of each dot.

9

10 31. A printer system adapted to print a location pattern comprising
11 a plurality of dots, the dots having a first dimension lying between
12 predetermined limits and each dot having an optical centre of gravity
13 located at a predetermined nominal positions in the pattern, the
14 system being adapted to modify the pattern prior to printing by
15 introducing an asymmetry to the dot shape of selected dots,
16 substantially without causing the first dimension to exceed its
17 predetermined limits, such that when printed on a pre-selected
18 printer the optical centre of gravity of the selected dots more closely
19 coincides with their corresponding nominal positions.

20

21 32. A location pattern arranged for use with a system comprising a
22 pattern space having a plurality of dots each having a nominal
23 position, the pattern having a plurality of dots, at least some of which
24 having an asymmetric shape, having no more than one axis of
25 symmetry, the asymmetric shape causing the optical centre of gravity
26 of those dots to be located substantially at the corresponding
27 predetermined nominal position.